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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/577,597

04/27/2006

Cha-Min Tang

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EDWARDS ANGELL PALMER & DODGE LLP

P.O. BOX 55874

BOSTON, MA 02205

EXAMINER

GEISEL, KARA E

ART UNIT

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2877

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/577,597	Applicant(s) TANG ET AL.	
	Examiner KARA E. GEISEL	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11, 14, 15, 20-26, 28, 30, 31, 35, 38, 47, 52, 55-61 and 66 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11, 14, 15, 20-26, 28, 30, 31, 35, 38, 47, 52, 56-58, 60 and 61 is/are rejected.
- 7) ☒ Claim(s) 55, 59 and 66 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 April 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>0406</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Preliminary Amendment

The preliminary amendment filed on April 27th 2006, has been entered into this application.

Information Disclosure Statement

The information disclosure statement filed April 27th, 2006 has been considered by the examiner.

Drawings

Figures 1 and 2A-C should be designated by a legend such as --Prior Art-- because only that which is old is illustrated as disclosed in the specification (§s 3-9). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to because figs. 4A-C, 5A-6 have a poor quality of shading, and it is not clear where the arrows are pointing to in the drawings. Fig. 7 is of poor quality, such that the shapes of the objects in the drawing are unclear. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either

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“Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 20-21, 31, 35, 52, and 57-58 are objected to because of the following informalities: minor typographical errors.

In regards to claim 20, line 4 “saimple” is misspelled.

In regards to claim 21, lines 4-6 and 9, “lisght”, “flourescent” are misspelled.

In regards to claim 31, line 1, “discrimately” is misspelled.

Claim 35, line 3, “said user input” lacks antecedent basis.

In regards to claim 52, line 2, “predetermioned” is misspelled.

In regards to claims 57-58, line 2 “siad” is misspelled.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regards to claim 23, line 2 “comprises at least one of...”, it is not clear from the claim whether applicant is claiming that the modulator contains one of each item listed, or that the modulator contains only one of the items. It appears that this claim was intended to be a Markush type claim, and for the purposes of prosecution, the Examiner is interpreting the claim as “wherein said spatial light modulator is selected from the group consisting of”.

Claim Rejections - 35 USC § 102

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 11, 14-15, 20-26, 28, 30, 38, 47, 52, and 56-58 are rejected under 35 U.S.C. 102(b) as being anticipated by MacAulay et al. (US Pubs 2003/0002040), as cited by the applicant.

In regards to claim 11, MacAulay discloses a method for discriminately exciting a fluorescent sample comprising: detecting an image (¶ 31 and ¶ 34 step a); feeding light information derived from the detected image to a spatial light modulator (¶ 35 and ¶ 34 step b); and modulating spatial light based at least in part on said light information (¶ 34 step c); wherein said image is detected from emitted light released from a fluorescent sample being excited by said modulated spatial light (¶ 12 and 69); and said modulated spatial light is discriminately emitted by said spatial light modulator to the fluorescent sample based at least in part on said light information (¶ 69); and further wherein said light information comprises data including brightness levels (¶ 11, intensity, or brightness is measured and compared to a threshold) and spatial distribution of the level of light emitted by the fluorescent sample (as can be seen in figs. 8A-B the spatial information is included in the image and ¶ 75 “location”).

In regards to claim 14, the method further comprises recording said light information to a memory ¶ 75 “database”); wherein after said light information is recorded within said memory, said recorded light information allows a user to recall and recurrently implement a discriminate excitation light to the fluorescent sample from said spatial light modulator (¶ 75).

In regards to claim 15, an intensity of said excitation light for exciting the fluorescent sample is substantially inversely proportional to an intensity of said light emitted by the fluorescent sample (as disclosed in the equation of ¶ 76).

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In regards to claim, 20, the method further comprises recording said light information to a memory (§ 75 "database"); wherein after said light information is recorded within said memory, said recorded light information allows a user to recall and recurrently implement a discriminate excitation light to the fluorescent sample from said spatial light modulator (§ 75); and varying said excitation light for exciting the fluorescent sample on a point-by-point basis based on intensities of said light emitted by the fluorescent sample (§ 75); where said excitation light is substantially inversely proportional to an intensity of said light emitted by the fluorescent sample (as disclosed in the equation of § 76).

In regards to claim 21, MacAulay discloses microscope (fig. 1) comprising: an image detector (26); a spatial light modulator (34), wherein said spatial light modulator is coupled to said image detector (as can be seen in figs. 1A-B), said image detector is capable of detecting light emitted from a fluorescent sample (20 and § 7) being excited by an excitation light (via 4) modulated by said spatial light modulator (34), said spatial light modulator discriminately emits said excitation light to the fluorescent sample based on information provided from at least said image detector (§ 37), and said information comprises data including brightness levels and the spatial distribution of the light emitted by the fluorescent sample (§ 75 "spot strength and location"); and at least one objective (22).

In regards to claim 22, said image detector is at least one of a charged coupled device, a CMOS camera, a video camera, and a photodiode array (§ 84).

In regards to claim 23, said spatial light modulator comprises at least one of a liquid crystal display, a micro-mirror device, an array of light-emitting diodes and a fiber bundle, an array of light bulbs, and an electro-mechanical device (§ 71).

In regards to claim 24, the microscope further comprises a memory (fig. 1A computer; § 75 "database"), wherein said memory is coupled with said image detector (as can be seen in fig. 1); and said information is recorded within said memory (§ 75), said recorded information allowing a user to recall

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and recurrently implement a discriminate excitation light to the fluorescent sample from said spatial light modulator (§ 75).

In regards to claim 25, an intensity of said excitation light for exciting the fluorescent sample is substantially inversely proportional to an intensity of said light emitted by the fluorescent sample (as disclosed in the equation of § 76).

In regards to claim 26, an intensity of said excitation light for exciting the fluorescent sample varies on a point-by-point basis with intensities of said light emitted by the fluorescent sample (§s 61 and 69).

In regards to claim 28, the microscope further comprises computer for controlling said spatial light modulator through manipulation of said information (as can be seen in fig. 1; § 65).

In regards to claim 30, the microscope further comprises a memory (as seen in fig. 1; § 65); wherein said excitation light for exciting the fluorescent sample varies on a point-by-point basis based on said light emitted by the fluorescent sample (§s 61 and 69); and said excitation light is substantially inversely proportional to an intensity of said light emitted by the fluorescent sample (as disclosed in the equation of § 76); where said information is recorded within said memory, said recorded information allowing a user to recall and recurrently implement a discriminate excitation light to the fluorescent sample from said spatial light modulator (§ 75).

In regards to claim 38, MacAulay discloses a computer program product (§ 33) for enabling a computer (fig. 1A-B) to discriminately excite a fluorescent sample comprising: a computer readable medium, and software instructions, on the computer readable medium, for enabling the computer to perform predetermined operations (§ 37) comprising: detecting an image (§ 31 and § 34 step a); feeding light information derived from the detected image to a spatial light modulator (§ 35 and 34 step b); and modulating a spatial light with said spatial light modulator based at least in part on said light information (§ 34 step c); wherein said image is detected from light released from a fluorescent sample being excited

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by said modulated spatial light (§ 12 and 69); and said modulated spatial light is discriminately transmitted by said spatial light modulator in at least a grayscale manner (§s 72-73) to the fluorescent sample based on said light information (§ 75); and further wherein said light information comprises information which distinguishes between variations in the level of light emitted by the fluorescent sample (§ 75 “strength of each spot can be calculated”).

In regards to claim 47, said predetermined operations comprise illuminating said fluorescent sample with epi-illumination (§ 86)

In regards to claims 52 and 56, the method and microscope further include emitting said spatial light in a predetermined illuminating light pattern on said sample (for example, fig. 7B).

In regards to claims 57-58, the spatial light modulator can be modulated in any way desired (a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. Since this reference meets all the structural limitations, it meets this limitation within the claim).

Claims 31, 35, and 60-61 are rejected under 35 U.S.C. 102(b) as being anticipated by Modell et al. (US Pubs 2001/0041843).

In regards to claim 31, Modell discloses device for discriminately masking a sample being viewed (fig 1), comprising: an image detector (17); and a spatial light modulator (13); wherein said spatial light modulator is coupled to said image detector (optically coupled as seen in fig. 1); said spatial light modulator discriminately emits excitation light to the sample to thereby discriminately mask at least a portion of the sample being viewed (§ 52); and said spatial light modulator moves along the optical axis of illumination (§ 63 and fig 3; wherein the optical axis of illumination is the dotted line going up and down the page).

In regards to claim 35, the device further comprises a memory for recording light information (fig. 11, 211), wherein said user input comprises a graphical user interface on a computer (212), wherein

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said graphical user interface can allow a user to recall and recurrently implement a discriminate light to the sample from the spatial light modulator (§ 111; a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. Since this reference meets all the structural limitation, it meets this limitation within the claim).

In regards to claims 60-61, the spatial light modulator can be modulated in any way desired (a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. Since this reference meets all the structural limitations, it meets this limitation within the claim).

Allowable Subject Matter

Claims 55, 59 and 66 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As to claim 55, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method for discriminately exciting a fluorescent sample wherein said spatial light modulator moves along the optical axis of illumination, in combination with the rest of the limitations of claim 55.

As to claim 59, the prior art of record, taken alone or in combination, fails to disclose or render obvious a microscope wherein said spatial light modulator moves along the optical axis of illumination, in combination with the rest of the limitations of claim 59.

As to claim 66, the prior art of record, taken alone or in combination, fails to disclose or render obvious a computer program product for enabling a computer to discriminately excite a fluorescent sample wherein said spatial light modulator moves along the optical axis of illumination, in combination with the rest of the limitations of claim 66.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kara E Geisel whose telephone number is **571 272 2416**. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on **571 272 2800 ext. 77**. The fax phone number for the organization where this application or proceeding is assigned is **571 273 8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Kara E. Geisel/
Art Unit 2877**

February 27, 2008